
September 2012

NEXT GENERATION ENTERPRISE NETWORK

Navy Implementing Revised Approach, but Improvement Needed in Mitigating Risks



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Why GAO Did This Study

DON, a component of the Department of Defense (Defense), is replacing its existing network system with NGEN. Capabilities for the new system include secure transport of voice and data, data storage, and e-mail, at a cost of about \$38 billion through fiscal year 2024. In March 2011, GAO reported that the approach for acquiring NGEN was not grounded in a reliable analysis of alternatives, the execution of NGEN was not based on a reliable schedule, and acquisition decisions were not always performance- and risk-based. GAO recommended that Defense, among other things, reconsider its approach. The department has not yet fully implemented GAO's recommendations but revised its approach to include acquiring certain NGEN services simultaneously instead of staggering their implementation.

GAO was asked to review the revised approach to determine (1) the extent to which DON's selected approach to acquire NGEN is the most cost effective and (2) the current status of and plans for acquiring NGEN. To do this, GAO reviewed analyses supporting the cost effectiveness of the acquisition approach, the program's revised acquisition strategy, integrated master schedule, key milestone decisions, and other relevant documents.

What GAO Recommends

GAO is recommending that Defense develop comprehensive risk mitigation plans for program-wide risks. In its comments, Defense concurred with GAO's recommendation and noted that it will continue to build on efforts to improve NGEN risk mitigation.

View [GAO-12-956](#). For more information, contact Valerie C. Melvin at (202) 512-6304 or melvinv@gao.gov.

What GAO Found

While the Department of the Navy (DON) has revised its acquisition approach for its new network system, the Next Generation Enterprise Network (NGEN), it still has not shown that it has selected the most cost-effective approach for acquiring NGEN capabilities. Cost effectiveness is shown by comparing life-cycle costs and quantifiable and nonquantifiable benefits among alternatives, which can be accomplished by conducting a thorough analysis of alternatives. GAO previously identified weaknesses with the NGEN analysis of alternatives related to cost estimates and analysis of operational effectiveness and made associated recommendations. However, DON did not revisit the analysis of alternatives to address the weaknesses previously identified, nor did it conduct any other analysis that would show whether its revised approach is the most cost effective. For example, while DON developed a draft economic analysis in February 2012, the analysis assessed only the status quo and revised approach, and not other alternatives. As a result, GAO remains concerned with the analysis measuring NGEN cost effectiveness and DON does not know whether its revised approach for acquiring NGEN is the most cost effective.

Even though DON lacks assurance that it is pursuing the most cost-effective approach to acquiring NGEN capabilities, it has moved forward with implementing its revised approach. For example, the agency has completed activities to support the acquisition and transition to NGEN, prepared plans and analyses required for program initiation, and conducted oversight reviews to support the release of the request for proposals for transport and enterprise services (secure data and e-mail services, among other things). However, the program's schedule for acquiring NGEN capabilities has been delayed, thus making it more likely that DON will not be able to fully transition by the end of the continuity of services contract in April 2014. For example, the release of the request for proposals was delayed, and upcoming milestones, such as contract award and program initiation, have slipped (see table for major delays). Program officials attributed the delays to the need for additional planning and to revisions to the request for proposals. Compounding this situation is that identified risks are not being adequately mitigated. For example, not all mitigation plans are comprehensive because they do not always include all the elements of an effective plan (e.g., identification of resources needed) nor do they always contain the current status of the mitigation actions. According to program officials, weaknesses in these mitigation plans were due, in part, to the lack of a priority in establishing and maintaining comprehensive and current mitigation plans. As a result, the program faces an increased probability that transition from its existing system to NGEN will face further delays and cost overruns.

Major Delays

Milestone	Status	Delay
Transport services request for proposals release	Completed	17 months
Enterprise services request for proposals release	Completed	9 months
Program initiation	Not yet occurred	15 months
Transport services contract award	Not yet occurred	14 months
Enterprise services contract award	Not yet occurred	6 months

Source: GAO analysis of DON data.

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Abbreviations

AOA	analysis of alternatives
Defense	Department of Defense
DON	Department of the Navy
IT	information technology
MAIS	Major Automated Information System
Marine Corps	United States Marine Corps
NGEN	Next Generation Enterprise Network
NMCI	Navy Marine Corps Intranet
USN	United States Navy

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United States Government Accountability Office
Washington, DC 20548

September 19, 2012

Honorable Susan M. Collins
Ranking Member
Committee on Homeland Security and Governmental Affairs
United States Senate

Honorable Claire McCaskill
Chair
Subcommittee on Contracting Oversight
Committee on Homeland Security and Governmental Affairs
United States Senate

The Department of the Navy's (DON) Next Generation Enterprise Network (NGEN) program is expected to replace and improve information technology (IT) services provided by the Navy Marine Corps Intranet (NMCI), which currently provides about 382,000 computer workstations to approximately 700,000 users across 2,500 United States Navy (USN) and United States Marine Corps (Marine Corps) locations around the world. As envisioned, NGEN is to provide secure data and IT services, such as data storage, e-mail, and video teleconferencing, and its capabilities are to be incrementally acquired through multiple providers. The first increment is planned to provide comparable NMCI capabilities, as well as enhanced information assurance and increased government control over network operations. This increment is expected to be fully operational by March 2014 and is estimated to cost approximately \$38 billion through fiscal year 2024.

In March 2011, we reported weaknesses in DON's NGEN acquisition, noting, for example, that its approach for acquiring the network capabilities was not grounded in a reliable analysis of alternatives (AOA).¹ As a result, we recommended, among other things, that the department conduct an interim review to reconsider the acquisition approach. DON subsequently reported that it had made changes to the NGEN acquisition approach.

¹GAO, *Information Technology: Better Informed Decision Making Needed on Navy's Next Generation Enterprise Network Acquisition*, GAO-11-150 (Washington, D.C.: Mar. 11, 2011).

At your request, we conducted a study of DON's revised approach for the NGEN acquisition. Our specific objectives were to determine (1) the extent to which DON's selected approach to acquire NGEN is the most cost effective and (2) the current status of and plans for this acquisition.

To determine the extent to which the selected acquisition approach is the most cost effective, we reviewed DON documentation describing the cost effectiveness of the acquisition approach, including the draft economic analysis and other analyses supporting specific acquisition approach changes. In addition, we interviewed cognizant DON and Office of the Secretary of Defense officials about the use of these analyses in acquisition decision making to ensure that NGEN capabilities are acquired in the most cost-effective manner.

To determine the current status of and plans for acquiring NGEN, we analyzed the program's revised acquisition approach, integrated master schedule, performance assessments, risk reports, and executive acquisition decision briefings and meeting minutes, among other things. We also discussed progress made on NGEN acquisition efforts with DON program officials. Additional details on our objectives, scope, and methodology are discussed in appendix I.

We conducted this performance audit from November 2011 to September 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

DON is a major component of Department of Defense (Defense), and consists of USN and Marine Corps service components. It is a large and complex organization, whose primary mission is to organize, train, maintain, and equip combat-ready naval forces capable of winning wars, deterring aggression from foes, preserving freedom of the seas, and promoting peace and security for the nation. To support this mission, DON performs a variety of interrelated and interdependent IT-dependent functions. In fiscal year 2012, DON's IT budget was approximately \$7.8 billion for 841 investments. NGEN, with a budget of \$1.7 billion in fiscal year 2012, is one such system investment.

Overview of NGEN

NGEN is to replace and improve the enterprise network and services provided by NMCI, which were delivered through a DON-wide network services contract with a single service provider (Hewlett Packard Enterprise Services) that ended in September 2010.² To bridge the time between the end of the NMCI contract and the full transition to the first increment of NGEN, DON awarded a \$3.4 billion continuity of services contract³ to Hewlett Packard Enterprise Services, which is scheduled to run from October 2010 through April 2014. In addition to providing continuity of network services, the contract includes transition services and the transfer of NMCI infrastructure and intellectual property to DON.

When implemented, NGEN is to provide secure data and IT services, such as data storage, e-mail, and video teleconferencing to USN and the Marine Corps. It is also intended to provide the foundation for DON's future Naval Networking Environment.⁴ The network is to be developed incrementally, with the first increment expected to inherit the same architecture and design, and provide the same capabilities and services as does NMCI. In addition, NGEN is to provide increased DON control over network operations and additional mandatory information assurance capabilities to meet new Defense security requirements and the implementation of an independent security validation function. Future increments of the network have yet to be defined.

While NGEN's first increment capabilities are not expected to differ from those of NMCI, the operational environment for the network is expected to change—from the contractor-owned and contractor-operated model previously used by both services to a government-owned and contractor-operated model for USN and to a government-owned and government-

²NMCI was composed of transport infrastructure such as cables, routers, and switches; end-user equipment such as computers, monitors, and keyboards; and software. It provided, among other things, data storage, e-mail, transport of voice and data, and video teleconferencing.

³In August 2012, DON issued a sole source modification notice to increase the contract ceiling to \$5.5 billion. According to DON officials, the increase is needed because additional funds will be necessary to maintain NMCI services through the transition to NGEN. Officials stated that the modification had not yet been approved.

⁴The Naval Networking Environment is to be an iterative set of integrated, phased programs that share a common enterprise architecture and standards. It includes NGEN and the Consolidated Afloat Networks and Enterprise Services program, among others, and is to be in place by 2016.

operated model for the Marine Corps. In particular, USN plans to have ownership and oversight of network operations while it relies on contractors to execute and provide NGEN services. The Marine Corps also plans to have ownership and oversight of network operations, but will serve as its own service provider and obtain supplemental contractor support as needed. The different operational models are intended to allow USN and Marine Corps to operate their respective domains in the manner best suited to support their different mission needs.

Oversight and Acquisition Processes for NGEN

To manage the acquisition and deployment of NGEN, DON established a program management office within the Program Executive Office for Enterprise Information Systems. In February 2011, DON merged the NGEN program management office with the NMCI program management office to form the Naval Enterprise Networks program management office. This office manages the program's cost, schedule, and performance and is responsible for ensuring that the program meets its objectives. In addition, various Defense and DON organizations share program oversight and review responsibilities. These key entities include the

- **Under Secretary of Defense for Acquisition, Technology, and Logistics.** Serves as the Milestone Decision Authority, which is the individual designated with overall responsibility for the program, to include approving the program to proceed through its acquisition cycle on the basis of, for example, the acquisition strategy, an independently evaluated economic analysis, and the acquisition program baseline. The Milestone Decision Authority is accountable for cost, schedule, and performance reporting, including reporting to Congress.
- **Assistant Secretary of the Navy, Research, Development, and Acquisition.** Serves as DON's acquisition oversight organization for the program, to include implementation of Under Secretary of Defense for Acquisition, Technology, and Logistics policies and procedures. Determines when all key milestones are ready to be submitted to the Milestone Decision Authority.

Department of the Navy, Program Executive Office for Enterprise Information Systems. Oversees a portfolio of large-scale projects and programs designed to enable common business processes and provide standard capabilities. Reviews the acquisition strategy, economic analysis, and the acquisition program baseline prior to approval by the Milestone Decision Authority.

- **Department of the Navy Chief Information Officer.** Supports DON's planning, programming, budgeting, and execution processes by ensuring that the program has achievable and executable goals and conforms to financial management regulations and to DON, Defense, and federal IT policies in several areas (e.g., security, architecture, and investment management). Works closely with the program office during milestone review assessments.

NGEN is designated as a Major Automated Information System (MAIS)⁵ and is subject to both the Office of the Secretary of Defense's and DON's MAIS acquisition policy and guidance,⁶ which require the program to comply with defense acquisition system requirements. The defense acquisition system consists of five key program life-cycle phases and three related milestone decision points: (1) materiel solution analysis, (2) technology development (milestone A held prior to entering this phase), (3) engineering and manufacturing development (milestone B held prior to entering this phase), (4) production and deployment (milestone C held prior to entering this phase), and (5) operations and support. The Milestone Decision Authority is to review the initial capabilities document, which defines operational goals and needed capabilities, and authorize the phase in which a MAIS program is to enter the defense acquisition system.

In May 2010, the Under Secretary of Defense for Acquisition, Technology, and Logistics authorized the NGEN program to enter the defense acquisition system at production and deployment. NGEN was approved to enter at this later phase because the technology was considered mature and already operational under NMCI. Prior to entering the production and deployment phase, a milestone C review must be held to review the capability production document and the test and evaluation master plan, among other things, and to authorize limited deployment to support operational testing. The purpose of the phase is to achieve an operational capability that satisfies the mission needs and is verified through independent operational test and evaluation, and to implement the

⁵Defense uses acquisition categories, where programs of increasing dollar value and management interest are subject to increasing levels of oversight. MAIS programs are the highest level category for automated information systems.

⁶Department of Defense Instruction 5000.02, *Operation of the Defense Acquisition System* (Dec. 8, 2008), and Secretary of the Navy Instruction 5000.2E, *Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System* (Sept. 1, 2011).

system at all applicable locations. At milestone C, the NGEN program is planned to be initiated and the acquisition program baseline to be approved, establishing the cost, schedule, and performance thresholds and objectives for the program. On approval of milestone C, DON will proceed with award of the NGEN contracts for the transport and enterprise services segments.

In addition to the defense acquisition system requirements, DON guidance and policy require all MAIS programs to go through a “two-pass/six-gate” acquisition review process.⁷ The first pass, which consists of gates 1 through 3, is focused on requirements development and validation and is led by the Chief of Naval Operations or the Commandant of the Marine Corps. The second pass, which consists of gates 4 through 6, is focused on developing and delivering a solution via systems engineering and acquisition and is led by the Assistant Secretary of the Navy (Research, Development and Acquisition). In addition to meeting specific criteria for passing a given gate and proceeding to the next gate, all gate reviews are to consider program health (i.e., satisfactory cost and schedule performance, known risks, and budget adequacy) in deciding whether to proceed. Table 1 lists the key purpose of each gate review.

Table 1: Key Purpose of Each DON Gate Review

Gate	Purpose
1	Approve the initial capabilities document and validate AOA guidance and assumptions.
2	Review the AOA and approve the preferred alternatives resulting from it.
3	Authorize the capability development document, which defines the system's key performance parameters and includes information necessary to develop an affordable system or system increment.
4	Approve the system design specification, which specifies the system requirements.
5	Approve release of a request for proposals.
6	Assess overall program health through multiple reviews, following award of a contract and satisfactory completion of an integrated baseline review ^a and approve the capability production document and program health prior to and after milestone C and the full deployment decision review. Sufficiency (sustainment) reviews focus on system performance and comparing actual performance and cost data to estimates.

⁷Secretary of the Navy Instruction 5000.2E.

Source: GAO analysis of DON documentation.

^aAn integrated baseline review is performed to obtain stakeholder agreement on a contractor's performance measurement baseline, which represents the cumulative value of planned work and serves as the baseline against which variances are calculated.

Prior GAO Review Identified Weaknesses in DON's Approach for Acquiring NGEN

In March 2011,⁸ we evaluated DON's AOA for NGEN, which had examined four acquisition alternatives. All of the alternatives were assumed to deliver the same NMCI capabilities and the technology considered for each alternative was assumed to be substantially the same. As a result, DON officials stated that the AOA was not intended to be a traditional analysis to determine a system solution, but rather was an analysis of alternative acquisition approaches. The primary differences among the alternatives related to how NGEN was to be acquired, managed, and operated. Specifically, the alternatives varied in terms of the number of contracts to be awarded and in the scope of government versus contractor responsibilities. Table 2 provides a description and comparison of each alternative that was examined in the AOA.

Table 2: Summary and Comparison of the Four Alternatives in the NGEN AOA

Alternative	Description	Contractual relationships	Fiscal years 2011 to 2015 estimated cost (in billions)	Relative risk
Alternative 1 (status quo)	A recompete of the NMCI contract as a commercial item under Federal Acquisition Regulation Part 12, in which the contractor was to be responsible for end-to-end integration of services and control of the network.	3	\$10.3	Least
Alternative 2 (enhanced status quo)	A single contract similar to NMCI but as a noncommercial item with contract terms and conditions that were to address known NMCI deficiencies ^a and give the agency more control. The contractor was to be responsible for end-to-end integration of services and the government would control the network.	3	\$10.8	More
Alternative 3 variant (segmented ^b approach)	Multiple contracts with different vendors, using the same negotiated approach as alternative 2. The government was to be responsible for end-to-end integration of services and control of the network.	10	\$10.8	Greater
Alternative 3 (segmented ^b approach)	A greater number of contracts than alternative 3 variant. The government was to be responsible for end-to-end integration of services and control of the network.	15	\$10.7	Greatest

Source: NGEN Analysis of Alternatives report, Center for Naval Analyses, April 2009.

⁸ GAO-11-150.

^aSee, for example, GAO, *Information Technology: DOD Needs to Ensure That Navy Marine Corps Intranet Program Is Meeting Goals and Satisfying Customers*, GAO-07-51 (Washington, D.C.: Dec. 8, 2006), for information on NMCI deficiencies.

^bA segment represents an allocation of IT services, functions, tools, and roles and responsibilities associated with end-to-end service delivery. Segmentation of the network creates interfaces, which DON refers to as “seams,” among the different contractors and government entities that must be managed effectively to ensure successful delivery and continuity of services.

However, we reported that the approach pursued by DON did not match any of the alternatives assessed in the AOA, and it was riskier and potentially costlier than the alternatives assessed because it included a higher number of contractual relationships. In particular, the chosen approach was one that included more contracts, a different segmentation scheme, and a different transition timeline than any of the alternatives that had been assessed. We also reported that DON’s November 2009 risk-adjusted preliminary program life-cycle cost estimate for the approach for fiscal years 2011 through 2015 showed that this approach would cost at least an estimated \$4.7 billion more than the alternatives assessed in the AOA.⁹ Moreover, DON had not analyzed the impact of these differences in terms of how they compared to the original alternatives. Further, we identified key weaknesses in the cost estimates and operational effectiveness analysis included in the NGEN AOA. Specifically, we reported that, while the AOA cost estimates were substantially well documented, they were not substantially accurate, and they were neither comprehensive nor credible. Additionally, we reported that, while the AOA identified program capabilities and goals, it did not sufficiently assess the alternatives’ ability to satisfy the capabilities and goals.

Given our findings, we recommended that Defense reconsider the acquisition approach based on a meaningful analysis of all viable alternative acquisition approaches. The department did not fully concur with our recommendation and stated that it had concluded that DON’s AOA was sufficient and that the analysis had been approved by the Office of the Secretary of Defense, Cost Assessment and Program Evaluation. The department added that it would complete an economic analysis for milestone C, which would include a follow-on independent cost estimate

⁹According to program documentation, the November 2009 risk-adjusted preliminary program life-cycle cost estimate of approximately \$50 billion was developed when program definition was still evolving and program documentation was very recent or did not exist. The NGEN life-cycle cost estimate has since been refined and is now approximately \$38 billion through fiscal year 2024.

and an updated determination of the most cost-effective solution. However, in response, we pointed out that DON planned to assess only the status quo and the current approach in the economic analysis, not other alternatives such as those that had been included in the AOA, and we maintained that without a meaningful analysis of alternatives, the department would be unable to determine the most cost-effective solution.

We also reported that DON's schedule for NGEN did not adequately satisfy key schedule estimating best practices by, for example, establishing the critical path (the sequence of activities that, if delayed, impacts the planned completion date of the project) and assigning resources to all work activities. Because it did not satisfy these practices, the schedule did not provide a reliable basis for program execution. According to program officials, schedule estimating had been constrained by staffing limitations. However, these weaknesses contributed to delays in the completion of NGEN events and milestones, including multiple major acquisition reviews and program plans. Accordingly, we recommended that Defense ensure that the NGEN schedule substantially reflect key schedule estimating practices. The department partially agreed with our recommendation.

Additionally, we reported that NGEN acquisition decisions were not always performance- and risk-based. In particular, senior executives had approved the program's continuing progress in the face of known performance shortfalls and risks. For example, in November 2009, the program was approved at a key acquisition review despite the lack of defined requirements, which officials recognized as a risk that would impact the completion of other key documents, such as the test plan. According to DON officials, the decision to proceed was based on their view that they had sufficiently mitigated known risks and issues. We recommended that the department ensure future NGEN acquisition reviews and decisions fully reflect the state of the program's performance and its exposure to risks. The department agreed with our recommendation.

DON Revised the NGEN Acquisition Approach

Subsequent to the issuance of our March 2011 report,¹⁰ DON reconsidered and made certain changes to the NGEN acquisition approach. Specifically, in April 2012, the Office of the Secretary of Defense approved NGEN acquisition approach changes that were intended to support program executability and reduce program risk for USN. Like the original approach, the revised approach emphasized segmentation of the network, with the same five segments that had been defined in the previous acquisition approach: the two primary segments are enterprise services and transport services and the remaining three segments are end user hardware; enterprise software licenses; and verification, validation, and reporting (see table 3 for details on these segments). Further, each segment is expected to be delivered by either a contractor or government provider, with multiple competitive awards. However, DON made changes to how certain NGEN segments are to be acquired and transitioned. For example, it plans to solicit transport and enterprise services using a single request for proposals and has said it may award a combined contract for both segments; in addition, it plans to transition both segments to the new provider(s) simultaneously instead of staggering their implementation. According to DON officials, these changes were made primarily because the transport and enterprise services segments were integrally related under NMCI, so acquiring them simultaneously would potentially reduce labor costs and administrative burden, and reduce risk. Another change is that USN is expected to acquire end user hardware as a service from the enterprise services contractor rather than purchase the equipment and provide it as government-furnished property to the contractor. According to program officials, this change was made to mitigate a critical NGEN risk that the program may not be fully funded if end user hardware must be purchased in fiscal year 2014 and, in the long term, procuring the end user hardware as a service is not more expensive than government-purchased equipment. As an additional change to the acquisition approach, USN is no longer expected to award a contract for the verification, validation, and reporting segment because it now has an internal entity—the Tenth Fleet Cyber Command—that is to perform this function. Table 3 summarizes the previous and current plans for acquiring NGEN.

¹⁰ GAO-11-150.

Table 3: Comparison of Previous and Current Plans for Acquiring Segments

NGEN segment	Purpose of segment	Previous acquisition approach	Revised acquisition approach
Enterprise services	Provide the enterprise service desk, seat services supporting end user devices, and data center services such as storage and e-mail, along with hardware and software specific to enterprise services that are not covered under the end user hardware and enterprise software licenses segments.	Award contract for enterprise services and transition to new provider separately from other segments, for both USN and Marine Corps.	Potentially award a combined contract with transport services and solicit the contract using a single request for proposals with transport services and transition to new provider simultaneously with transport services, for both USN and Marine Corps.
Transport services	Provide for the operation and sustainment of the transport infrastructure, associated services, and level-of-effort support for those services. It includes technology refresh of cable plant, routers, and switches; some leasehold improvements; and moveable infrastructure associated with local network operations.	Award contract for transport services and transition to new provider separately from other segments for both USN and Marine Corps.	Potentially award a combined contract with enterprise services and solicit the contract using a single request for proposals with enterprise services and transition to a new provider simultaneously with enterprise services, for both USN and Marine Corps.
End user hardware	Provide end user equipment such as computers, monitors, and keyboards.	Award contracts for end user hardware with DON ownership of equipment, for both USN and Marine Corps.	USN will acquire end user hardware as a service from the enterprise services contractor. While it may purchase the initial end user hardware and provide it as government-furnished property to the enterprise services contractor, it will acquire end user hardware as a service from the contractor once the initial equipment requires technology refresh. No change for Marine Corps from previous approach.
Enterprise software licenses	Provide software licenses to meet DON-wide requirements.	Award contract for end user software licenses for both USN and Marine Corps.	No change from previous approach.
Verification, validation, and reporting	Provide independent third-party security assessments of NMCI and NGEN to support all DON networks within the naval network environment.	Award contract for independent security assessment services for USN. Marine Corps will perform its own security function.	USN will perform its own security function. No change for Marine Corps from previous approach.

Source: GAO analysis of DON data.

DON's planned transition from NMCI's contractor-owned and contractor-operated model to NGEN's government-owned and contractor-operated model for USN and government-owned and operated model for the Marine Corps includes establishing government control over network operations and transferring responsibility for network services from the incumbent provider to new service providers (contractor or government) in phases. DON is working to establish government control before award

of the transport and enterprise services contract(s) to help reduce risk during the transition to new provider(s). Specifically, it has defined early transition activities as discrete efforts that are intended to establish government management capabilities, allow for greater participation in operational decisions, and help expedite the transition time. In addition, USN plans to demonstrate that it has the people, processes, and tools in place to execute command and control and governance in a segmented environment without service degradation through a series of four government readiness reviews. Government readiness review 0 is planned to assess general government readiness prior to milestone C, including determining whether USN has clearly defined the operating model and whether the program office is ready to manage and execute the transition with an acceptable level of risk. Government readiness review 1 is planned to assess readiness after milestone C and prior to award of the transport and enterprise services contract(s) to integrate IT service management capabilities. Government readiness reviews 2 and 3 are planned to assess readiness after contract award to transition remaining aspects, such as network and security operation centers.¹¹ Further, USN and Marine Corps have identified two transition completion milestones—initial transition complete and final transition complete. DON is working towards ensuring that all of these transition milestones are met by the end of the continuity of services contract in April 2014.

¹¹In addition to the government readiness reviews, USN plans to conduct a series of accompanying reviews with the contractor(s) to validate contractor readiness to transition.

DON Has Not Reevaluated Alternatives to Ensure It Is Pursuing the Most Cost-Effective NGEN Acquisition Approach

According to cost estimating and acquisition guidance,¹² cost effectiveness is shown by a comparative analysis of all life-cycle costs and quantifiable and nonquantifiable benefits among the competing alternatives. Such an analysis should be used to examine viable alternatives to inform acquisition decision making on the most promising solution, without assuming a specific means of achieving the desired result. For example, an AOA is initiated to examine potential solutions with the goal of identifying the most promising option and can subsequently be updated, as needed, to refine the proposed solution and reaffirm the rationale in terms of cost effectiveness.¹³ Additionally, an economic analysis assesses net costs and benefits of the proposed solution relative to the status quo and can identify and examine additional alternatives that are considered feasible methods of satisfying the objective.

Even after having revised its acquisition approach, DON has not yet shown that it is pursuing the most cost-effective approach for acquiring NGEN capabilities because it did not revisit the AOA to address the weaknesses we previously identified,¹⁴ nor did it conduct any other analysis that would show that the current approach is the most cost effective. Officials told us they believe the approach they are now pursuing remains consistent with the AOA we previously assessed. However, the revised approach DON is now pursuing was not one of the alternatives assessed because it differs from the AOA alternatives in terms of transition timeline, segmentation scheme, and potentially the number of contracts and the AOA still contains the issues we identified in our previous report.

Additionally, while DON developed a draft economic analysis for NGEN in February 2012, the analysis assesses only the status quo (i.e., NMCI) and the current acquisition approach for NGEN. As was the concern noted in our previous report, this analysis does not show whether DON's

¹²GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: March 2009); Defense Acquisition University, *Defense Acquisition Guidebook* (accessed January 10, 2012).

¹³*Defense Acquisition Guidebook* and *DON Acquisition and Capabilities Guidebook* (May 2012).

¹⁴GAO-11-150.

approach is the most cost-effective solution. Further, according to program officials, the draft economic analysis is to be refined and updated based on a revised service cost position,¹⁵ and is not expected to be final until the acquisition program baseline is to be approved and about 3 months before the planned time frame for awarding the primary NGEN contracts for transport and enterprise services, and thus, would be limited in its ability to inform decision makers on the best NGEN approach to pursue. Program officials agreed that the final economic analysis would not be able to show the most cost-effective solution; they stated that the economic analysis is being prepared because it is a required document for program initiation (milestone C review).

DON also developed analyses to support changes to its acquisition approach by examining whether a specific change to a particular segment would be more cost effective. For example, DON examined whether it should release one request for proposals instead of two for the transport and enterprise services segments. Additionally, USN examined whether it should acquire existing end user hardware owned by the incumbent and provide it to the enterprise services contractor as government-furnished property or acquire the end user hardware from the enterprise services contractor as a service. However, because these analyses focus on specific changes, they do not provide an understanding of whether DON's overall acquisition approach is the most cost effective. Without a meaningful analysis of acquisition alternatives, DON does not know whether its approach for acquiring NGEN capabilities and meeting NGEN goals is the most cost effective among other viable alternatives.

¹⁵The service cost position is DON's first official cost estimate for NGEN, reflecting total life-cycle NGEN costs of about \$38 billion through fiscal year 2024, and was developed by reconciling the NGEN program life-cycle cost estimate with an independent cost estimate developed by the Naval Center for Cost Analysis.

DON Is Proceeding with the NGEN Acquisition, but Is Experiencing Schedule Delays and Not Adequately Mitigating Risks

Notwithstanding the lack of assurance that it is pursuing the most cost-effective acquisition, DON nonetheless has moved forward with its revised approach for acquiring NGEN. In this regard, the department has undertaken activities to support its acquisition and transition to NGEN, prepared plans and analyses required for program initiation at milestone C, and conducted oversight reviews to support the release of the request for proposals for transport and enterprise services. However, the program's schedule for acquiring NGEN capabilities has been delayed, resulting in a compressed timeline for transitioning to the new network and increased risks associated with transitioning to the new network before the end of the continuity of services contract. Compounding this situation is the fact that identified risks that can further impact schedule delays are not being adequately mitigated.

Execution of the NGEN Program Is Proceeding, but Major Milestones Have Slipped

DON has undertaken activities to support its acquisition and transition to NGEN, prepared plans and analyses required for program initiation at milestone C, and conducted oversight reviews to support the release of the request for proposals for transport and enterprise services. Specifically,

- As of December 2011, DON had completed early transition activities, such as developing IT service management strategies, processes, procedures, and tools to serve as the overarching governance framework for delivering NGEN capabilities; analyzing and validating the current NMCI infrastructure inventory; and conducting job task analyses and assessing learning tools for contractor technical representatives. Additionally, the Marine Corps assumed control of the NMCI infrastructure currently supporting its operations and awarded the Marine Corps Common Hardware Suite contract to procure NGEN end user hardware in May 2012. Also in May 2012, DON reached agreement on the first of 12 planned enterprise software license agreements. Further, the department released NGEN documents and technical data to industry to ensure all competitors have full access to NMCI technical data and to reduce the potential for a protest. DON also released multiple requests for information and solicited input from industry on a draft request for proposals in order to better understand the capabilities of the current IT marketplace with respect to NGEN requirements. Finally, DON released the request for proposals for transport and enterprise services in May 2012.
- DON has also prepared several plans and analyses required for program initiation at milestone C, when the acquisition program

baseline is to be approved. In particular, in October 2011, DON approved the cost analysis requirements description, which defines the programmatic and technical features of NGEN increment 1 and serves as the basis for estimating program costs. Additionally, the Naval Center for Cost Analysis developed the service cost position, which was based on the reconciliation of a completed program life-cycle cost estimate and an independent cost estimate. DON also approved the systems engineering plan and the test and evaluation master plan, which describes the overall test and evaluation strategy for how the network's capabilities will be assessed. Subsequently, in November 2011, the program office developed the capability production document, which clarified and solidified the capabilities for NGEN increment 1 and became the primary source requirements document for the program. Finally, the revised acquisition strategy, which was required prior to release of the transport and enterprise services request for proposals, was approved in April 2012.

- According to Defense and DON policy, acquisition programs must proceed through a series of gate and milestone reviews (as described earlier in this report in table 1). Since our prior report,¹⁶ DON has conducted two gate reviews and an Office of the Secretary of Defense-level decision review to support the release of the request for proposals for transport and enterprise services. In particular, in October 2011, it completed an acquisition gate review to endorse the NGEN increment 1 capability production document. Subsequently, DON conducted a second NGEN acquisition gate review in January 2012 to approve the transport and enterprise services request for proposals, during which it reviewed the current status and health of the program including the key activities remaining to release the request for proposals. Subsequently, in April 2012, the Office of the Secretary of Defense, Milestone Decision Authority, reviewed the NGEN program to approve the updated acquisition strategy and authorize the release of the transport and enterprise services request for proposals.

While DON has made progress on these efforts to acquire and transition to NGEN, key program activities remain to be completed. For example,

¹⁶We previously reported in March 2011 that DON had completed gates 1 through 4 and conducted a gate 5 review in October 2010 of its transport services request for proposals but had not yet exited the gate because approval to proceed was conditional based on satisfactory completion of open action items ([GAO-11-150](#)).

DON will need to demonstrate that it is prepared to execute control and governance of the network through four government readiness reviews; baseline the program by establishing cost, schedule, and performance thresholds and objectives; award the primary NGEN contract(s); and transition to the new NGEN provider(s). Table 4 lists planned completion dates for these remaining key activities.

Table 4: Remaining Key NGEN Program Activities

Activity	Planned date
Government readiness review 0	September 2012
Gate 6 (sufficiency) review	October 2012
Milestone C review (NGEN program initiation)	November 2012
Government readiness review 1	December 2012
Award of transport and enterprise services contract(s)	February 2013
Government readiness review 2	April 2013
USN initial transition complete	May 2013
Finalization of software licensing agreements ^a	June 2013
Marine Corps final transition complete	June 2013
Government readiness review 3	July 2013
USN final transition complete	March 2014

Source: DON data.

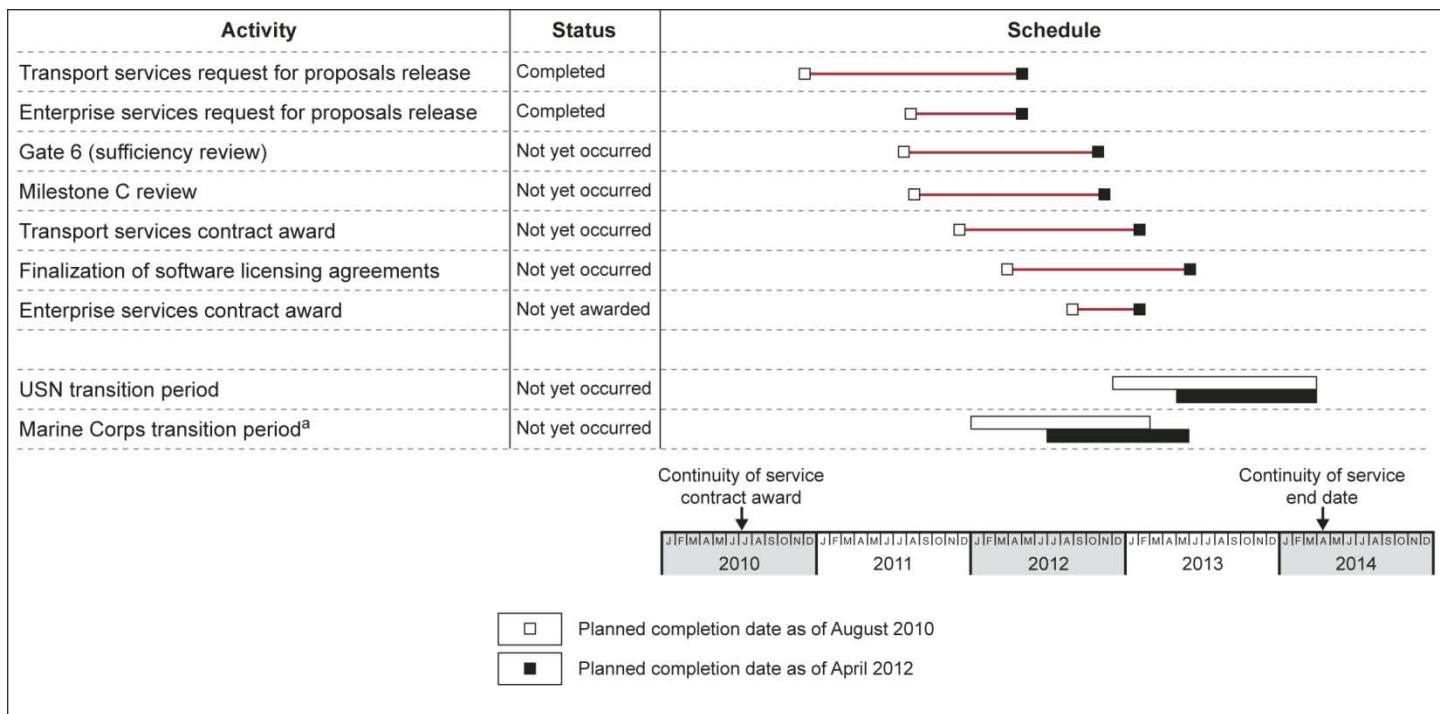
^aDON plans to enter into 12 enterprise software license agreements and this date represents finalization of the last agreement.

However, a number of acquisition activities are facing schedule delays, even though the incumbent is scheduled to end service delivery in April 2014. Specifically, while the request for proposals for transport and enterprise services was issued, as we previously stated, it was delayed by 17 months and 9 months, respectively, resulting in current delays in NGEN program milestones, including the dates for conducting the milestone C review and awarding the contract(s) for transport and enterprise services. Additionally, the schedule for assessing USN's readiness to transition (i.e., government readiness reviews) is tied to milestone C review and contract award, meaning that they are expected to occur a certain number of days before or after their associated event; thus, the government readiness reviews would also be impacted by delays in milestone C and contract award. Moreover, these delays have compressed the timeline for and increased the risks associated with transitioning to the new network before the end of the continuity of services contract. For example, the date for USN's initial transition from the current service provider to the new service provider(s) has slipped by

5 months and final transition is scheduled for March 2014, thus compressing the period for shutting down network services with the incumbent and transitioning them to the new NGEN contractor(s) by about 5 months. Further, USN has identified a number of factors that could impact transition and increase the risk that NGEN may not be completed on time and may experience cost overruns, such as proposals not meeting NGEN requirements and lack of coordination among contractors and the government in operating the network.

Program officials attributed these schedule delays to the department's need to conduct more detailed planning before issuing the transport and enterprise services request for proposals and for addressing industry comments on the draft request for proposals to reduce the potential of a bid protest. Figure 1 illustrates the delays in major NGEN milestones.

Figure 1: NGEN Major Milestone Delays



Source: GAO analysis of DON data.

Notes: The schedules, considered to be informal baseline schedules, have been used to manage the overall scope of work to be conducted within the program. An official baseline schedule is expected to be approved as part of the acquisition program baseline at milestone C.

Delays were rounded to the nearest month.

^aAccording to Marine Corps officials, new criteria for the initial and final transition complete milestones resulted in new dates for planned completion in the April 2012 schedule.

Our prior report highlighted the significance of DON not having a reliable schedule for executing NGEN and its contribution to delays in key program milestones.¹⁷ The lack of a reliable schedule, as we previously noted, and the continuing delays in DON's efforts to complete the network transition as planned, raise concerns that it will be unable to complete the transition within the time frames of the current continuity of services contract. As a result, ensuring that the NGEN schedule substantially reflects the key estimating practices, as we discussed and recommended in our previous report, continues to be a vital step for DON to take.

Program Risk Mitigation Plans Have Not Been Fully Defined

According to industry best practices,¹⁸ an effective risk management process identifies potential problems before they occur, so that risk-handling activities may be planned and invoked, as needed, across the life of the product and project in order to mitigate adverse impacts on achieving objectives. Key activities of a comprehensive risk management process include (1) identifying and analyzing risks, (2) escalating key risks to the attention of senior management, and (3) developing risk mitigation plans and milestones for key mitigation deliverables. In particular, effective plans for risk mitigation should be developed for the most important risks to the project, which includes a period of performance, identification of resources needed, and responsible parties. In addition, the status of each risk should be monitored periodically to determine whether established thresholds have been exceeded and risk mitigation plans should be implemented as appropriate to ensure that systems will operate as intended.

NGEN program-wide and project-specific risks are managed by different offices, with the program office identifying and tracking program-wide risks—those that affect the overall NGEN program. In accordance with best practices, the NGEN program identifies and analyzes program-wide risks, by assigning a severity rating to risks, tracking these risks in a database, and planning response strategies for each risk in the database. In addition, NGEN program officials escalate these risks by reviewing and evaluating these risks during monthly program risk management board meetings. As of July 2012, the program office had identified eight

¹⁷ GAO-11-150.

¹⁸ Carnegie Mellon Software Engineering Institute, Capability Maturity Model® Integration for Services (CMMI-SVC), version 1.3 (November 2010).

program risks that it considered critical (moderate- or high-level risks) and that could result in schedule delays and cost increases. These risks included potential delays in transition from the incumbent to the new service provider(s) and in contract award for the transport and enterprise services, as well as the potential lack of coordination among contractors and the government in operating the network. Table 5 describes the program-identified critical risks for NGEN as of July 2012.

Table 5: NGEN Program Critical Risks, as of July 2012

Program-identified critical risk	Program risk description from program documentation	Program-identified risk level
NGEN service request tool	The current tools for ordering requests for services are not prepared within the NGEN environment. If the development of a functional NGEN ordering tool is not complete in time to support the NGEN transition, then ordering will rely on error-prone manual processes. Without automated ordering, service delivery will degrade and staffing costs to perform ordering will increase significantly.	High
Transition delays for USN	Significant delays could impact the ability to transition from the incumbent to the new service provider(s) before the continuity of services contract performance period ends in April 2014. If USN does not fully transition in time, it will have to extend the continuity of services contract, resulting in cost increases and additional schedule delays.	High
Seam management	Roles and relationships among segments and government functions have not been defined or agreed on. If these seams are not accurately identified and characterized, DON will not be able to manage them effectively and the transition will take longer.	High
Purchase of end user hardware for USN	The NGEN program will not be fully funded if end user hardware must be purchased in fiscal year 2014 for approximately \$150 million.	Moderate
Delayed transport and enterprise contract(s) award	A day-to-day slip in completing the final transition will be realized if award of transport and enterprise service contract(s) is delayed.	Moderate
Systems engineering	Service performance may degrade, systems integration costs may increase, and time to resolve engineering issues may increase if the program is unable to execute design authority and problem management.	Moderate
Service offering descriptions	Service availability and performance will degrade if DON cannot effectively manage the level of service quality and direct the resources in support of service delivery.	Moderate
Potential protest is sustained	A protest against any of the NGEN contract awards may impact the schedule for transition completion by as much as 6 months, resulting in an extension of the continuity of services contract.	Moderate

Source: DON data.

While DON is working to mitigate seven of the eight program risks, its mitigation plans did not always include all the elements of an effective plan (e.g., identification of resources needed, responsible parties, and period of performance). Specifically, the reported mitigation strategies did not fully identify the resources needed, such as the staff and funds, nor

fully identify organizations that are responsible and accountable for accomplishing risk mitigation activities. Additionally, while five of the seven mitigation plans had activities with planned completion dates, most did not include an estimated start date; thus, the plans did not fully define the period of performance to ensure that the mitigation activities are being implemented appropriately. Moreover, three of the seven plans did not identify the status of activities for which completion dates had already occurred. In particular, to mitigate the risk of potential lack of coordination among contractors and the government in operating the network, DON was to develop, implement, and automate key processes by February 15, 2012. However, the plan does not reflect whether this activity has been completed or, otherwise discuss its status.

Additionally, two of the seven plans did not fully reflect the current status of the program. For example, to mitigate transition risks, DON officials identified that the enterprise and transport services contract(s) must be awarded no later than December 2012 in order to ensure continuous network availability during the transition from the continuity of services contract to the NGEN contract(s). However, the current mitigation plan does not document this milestone or reflect the current status of the program, which now plans to award the contract(s) in February 2013.

Further, according to program documentation, a mitigation plan was required and was being updated for the service offering descriptions risk; however, according to other program documentation, the plan to mitigate service offering descriptions is still under development, even though it has been identified as a program risk since August 2011. According to program officials, weaknesses in these mitigation plans were due, in part, to the lack of a priority in establishing and maintaining comprehensive and current plans.

Several of the risks identified are significant to ensure that NGEN transition occurs as planned and within the estimated costs. Therefore it is essential to ensure that for a given risk, techniques and methods will be invoked to avoid, reduce, and control the probability of occurrence.

Conclusions

Even though DON does not know whether it is pursuing the most cost-effective approach to acquiring NGEN capabilities, it has proceeded to implement its revised acquisition approach, completed various plans and analyses including the first official program life-cycle cost estimate, and held oversight reviews to support the issuance of the request for proposals for the two primary NGEN segments. While these steps have

been taken, DON faces delays in upcoming milestones, which have resulted in a compressed transition timeline and increased risks associated with transitioning to the new network before the end of the continuity of services contract. Compounding this are weaknesses in DON's risk mitigation efforts that could further impact schedule delays and result in cost increases. Without a well-defined schedule, as we previously reported, and adequate risk mitigation, DON cannot ensure that needed NGEN capabilities will be in place in time to ensure that services will continue to operate when the incumbent is scheduled to shut down its services.

Recommendation for Executive Action

To strengthen risk mitigation activities for the NGEN program, we recommend that the Secretary of Defense direct the Secretary of the Navy to develop comprehensive mitigation plans and strategies for program-wide critical risks that identify the mitigation period of performance, resources needed, and responsible parties, and that fully reflect the current status of the program.

Agency Comments

The Department of Defense provided written comments on a draft of this report, signed by the Deputy Assistant Secretary of Defense (C3 and Cyber), and reprinted in appendix II. In its comments, the department agreed with our recommendation and noted that the program office will continue to build on efforts to improve NGEN's risk management and mitigation process. For example, the department stated that it plans to increase the speed at which NGEN risk management board action items are closed.

We are sending copies of this report to the appropriate congressional committees; the Director, Office of Management and Budget; the Congressional Budget Office; the Secretary of Defense; and the Secretary of the Navy. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-6304 or melvinv@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last

page of this report. GAO staff who made major contributions to this report are listed in appendix III.



Valerie C. Melvin
Director, Information Management and Technology Resources Issues

Appendix I: Objectives, Scope, and Methodology

Our objectives were to determine (1) the extent to which the Department of the Navy's (DON) selected approach to acquiring the Next Generation Enterprise Network (NGEN) is the most cost effective and (2) the current status of and plans for acquiring NGEN.

To determine the extent to which DON's approach to acquiring NGEN is the most cost effective, we reviewed our prior work evaluating the NGEN analysis of alternatives¹ and analyzed current documentation that DON had completed to describe and justify the cost effectiveness of its acquisition approach. These included the draft economic analysis and analyses to support specific acquisition approach changes. We assessed DON's supporting analyses against relevant Department of Defense guidance and our *Cost Estimating and Assessment Guide*.² In this regard, we evaluated the purpose and use of these analyses in examining viable alternatives to inform acquisition decision making on the most cost-effective solution. We also interviewed cognizant DON program officials and Office of the Secretary of Defense Cost Assessment and Program Evaluation officials about the use of these analyses in acquisition decision making.

To determine the current status of and plans for acquiring NGEN, we analyzed the revised NGEN acquisition strategy, integrated master schedule, program performance assessments, risk reports, transport and enterprise services request for proposals, planned system requirements, cost estimates, draft operational readiness plan, and executive acquisition decision briefings and meeting minutes, among other things. We also reviewed these documents to determine how the program had changed since our prior review of NGEN.³ To assess the status of risk management for the NGEN program initiative, we compared the risk management plans and supporting documentation against leading practices, such as Carnegie Mellon Software Engineering Institute's

¹GAO, *Information Technology: Better Informed Decision Making Needed on Navy's Next Generation Enterprise Network Acquisition*, GAO-11-150 (Washington, D.C.: Mar. 11, 2011).

²GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: March 2009); Defense Acquisition University, *Defense Acquisition Guidebook* (accessed January 10, 2012); and DON *Acquisition and Capabilities Guidebook* (May 2012).

³GAO-11-150.

Capability Maturity Model® Integration for Services,⁴ to determine whether such practices had been specified in the plans. Further, we interviewed relevant DON program officials and Office of the Secretary of Defense Cost Assessment and Program Evaluation officials to clarify information in documents we reviewed and to more fully understand the program's progress to acquire NGEN. To assess the reliability of the data that we used to support the findings in this report, we reviewed relevant program documentation to substantiate evidence obtained through interviews with agency officials. We determined that the data used in this report are sufficiently reliable. We have also made appropriate attribution indicating the sources of the data used.

We conducted this performance audit from November 2011 to September 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

⁴Carnegie Mellon Software Engineering Institute, Capability Maturity Model® Integration for Services (CMMI-SVC), version 1.3 (November 2010).

Appendix II: Comments from the Department of Defense



OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

SEP 11 2012

Ms. Valerie Melvin
Director, Information Management
and Technology Resources Issues
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Ms. Melvin:

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-12-956, "NEXT GENERATION ENTERPRISE NETWORK: Navy Implementing Revised Approach, but Improvement Needed in Mitigating Risks," dated August 24, 2012 (GAO Code 310977). Detailed comments on the report recommendations are enclosed.

Sincerely,

Dr. Ronald C. Jost
Deputy Assistant Secretary of Defense
(C3&Cyber)

Enclosure:
As stated

**GAO DRAFT REPORT DATED AUGUST 24, 2012
GAO-12-956 (GAO CODE 310977)**

**“NEXT GENERATION ENTERPRISE NETWORK:
NAVY IMPLEMENTING REVISED APPROACH, BUT IMPROVEMENT NEEDED IN
MITIGATING RISKS”**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATIONS**

RECOMMENDATION: To strengthen risk mitigation activities for the NGEN project, GAO recommends that the Secretary of Defense direct the Secretary of the Navy to develop comprehensive mitigation plans and strategies for programwide critical risks that identify the mitigation period of performance, resources needed, responsible parties, and that fully reflect the current status of the program.

DoD RESPONSE: Concur. The Naval Enterprise Networks (NEN) Program Office has already taken several steps to bolster NGEN’s risk management and mitigation program. The Navy has implemented Risk Exchange as the enterprise risk tool, replacing previously used Risk Registry (Risk Radar). This web-based tool has provided greater access and significantly improved visibility into risk mitigation strategies, timelines, status and required resources for responsible parties and other stakeholders. Now program office personnel along with NGEN stakeholders can effectively collaborate on broader mitigation strategies tied to internal and external factors that potentially have direct and indirect cost impacts to program execution. The NGEN Program Office has combined the risk management efforts of acquisition and operations functions, further enhancing collaboration among Risk Managers and Risk Coordinators across the entire program office.

The Program Office continues to place greater emphasis on the timeliness of risk information. The number of Risk Management Board (RMB) meetings has increased from 8 in FY 2011 to 10 in FY 2012 (to date). The speed at which RMB actions are closed has increased by 28%. In FY 2011 the average number of calendar days to close an action was 85; in FY 2012 (to date) it was reduced to 61, to include a large number of backlogged actions. The goal for FY 2013 is to close actions within 30 days. The number of working days to release RMB minutes has been reduced by 43%, from 7 days to 4 days.

Going forward, the Navy will continue to build upon these efforts. The Navy will be rolling out an updated NEN Risk Management Plan that incorporates the major changes that have occurred since its last iteration of September, 2011. The NGEN Program Office will continue the integration of acquisition and operations risk management efforts to promote visibility and communication and build a more risk-aware culture across the program.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Valerie C. Melvin, (202) 512-6304, or melvinv@gao.gov

Staff Acknowledgments

In addition to the individual named above, key contributors to this report were Eric Winter (assistant director), Nabajyoti Barkakati, Harold Brumm, Neil Doherty, Nancy Glover, Madhav Panwar, Jeanne Sung, and Niti Tandon.

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